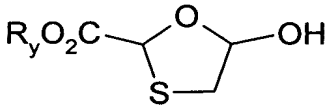
The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

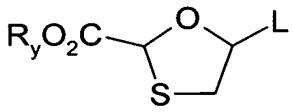
35. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is $C_{1\text{-}12}$ alkyl or $C_{6\text{-}20}$ aryl to obtain a compound of formula (XV)



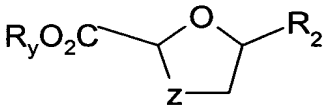
(XV) ;

converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated R_2- compound , in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):

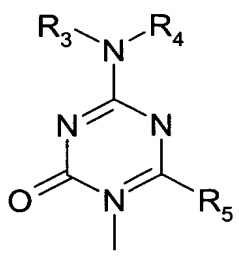


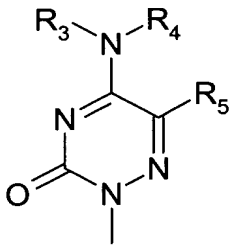
(XVII) ,

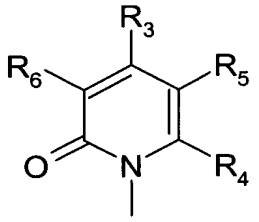
wherein

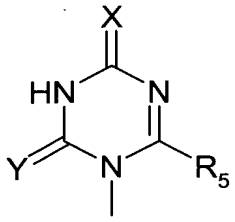
Z is S;

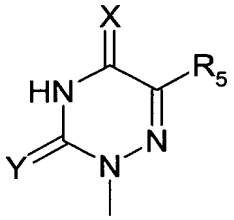
R_2 is selected from the following group:

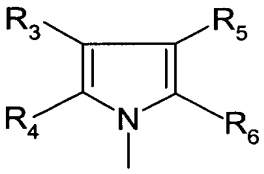


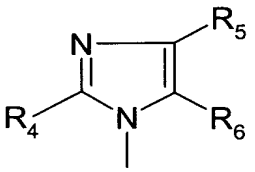


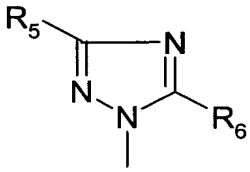


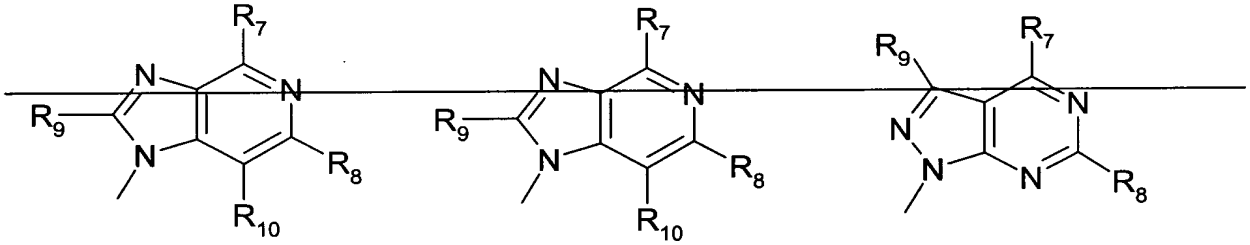


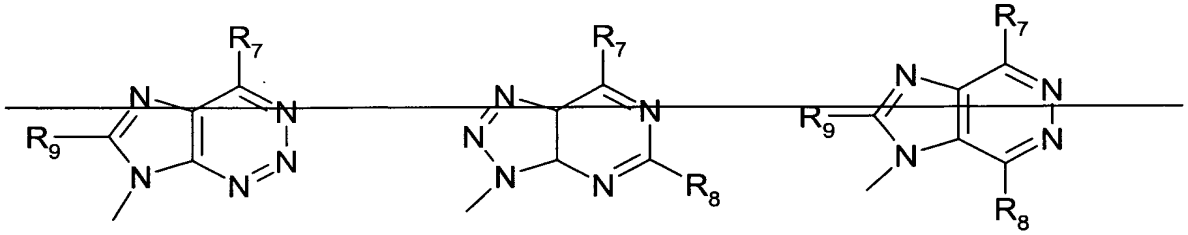












X is oxygen or sulfur;

Y is oxygen or sulfur;

R_3 and R_4 are independently selected from hydrogen, hydroxyl, amino, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyl or aracyl; and

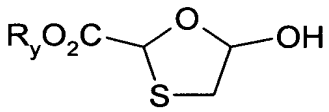
R_5 and R_6 are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy;

~~R_7 and R_8 are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy; and~~

~~R_9 and R_{10} are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~.

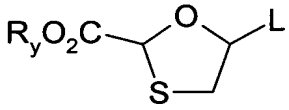
36. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is C_{1-12} alkyl or C_{6-20} aryl to obtain a compound of formula (XV)



(XV) ;

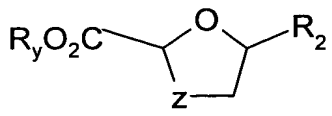
converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated R_2- compound , in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of

formula (XVII):

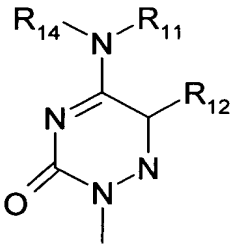


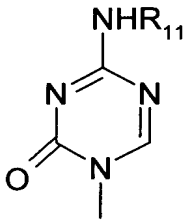
(XVII) ;

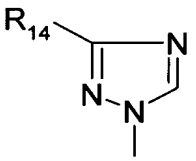
wherein

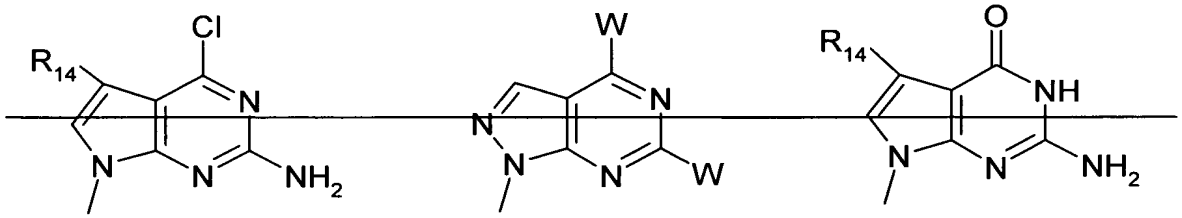
Z is S;

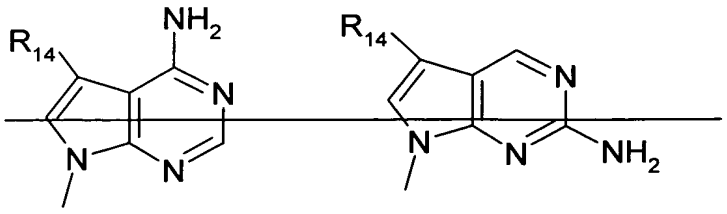
R_2 is selected from the following group:











wherein

~~each~~ R_{11} is ~~independently~~ selected from hydrogen, acetyl, and C_{1-6} alkyl;

R_{12} ~~and R_{13} are independently~~ is selected from hydrogen, hydroxymethyl, trifluoromethyl, C_{1-6} alkyl, C_{1-6} alkenyl, bromine, chlorine, fluorine, and iodine; and

R_{14} is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl~~; and~~

~~each W is independently selected from hydrogen, bromine, chlorine, fluorine, iodine, amino, and hydroxyl~~.

37. (Previously Presented) A process according to claim 35, wherein L is OR_z, wherein R_z is selected from: C_{1-6} alkyl groups, C_{1-6} aliphatic groups, aromatic acyl groups, saturated or unsaturated alkoxycarbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

38. (Previously Presented) A process according to claim 36, wherein L is OR_z, wherein R_z is selected from: C_{1-6} alkyl groups, C_{1-6} aliphatic groups, aromatic acyl groups, saturated or unsaturated alkoxycarbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

39. (Previously Presented) A process according to claim 35, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

40. (Previously Presented) A process according to claim 39, wherein said inert solvent is selected from the group consisting of: pyridine, toluene and DMSO.

41. (Previously Presented) A process according to claim 35, wherein said compound of formula RyOOCCHO is ethyl gloxylate.

42. (Previously Presented) A process according to claim 36, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert

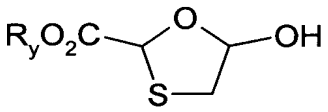
solvent.

43. (Previously Presented) A process according to claim 42, wherein said inert solvent is selected from the group consisting of: pyridine, toluene and DMSO.

44. (Previously Presented) A process according to claim 36, wherein said compound of formula RyOOCCHO is ethyl gloxylate.

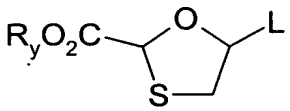
45. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is C_{1-12} alkyl or C_{6-20} aryl to obtain a compound of formula (XV)



(XV) ;

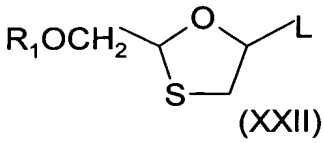
converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

converting the group R_yO_2C of the compound of formula (XVI) to a hydroxymethyl group;

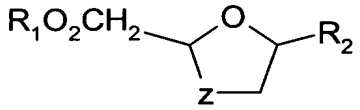
protecting the resulting hydroxymethyl with a protecting function R_1 to obtain a compound of formula (XXII):



(XXII) ;

wherein R_1 is selected from the group consisting of C_{1-16} acyl, t-butyldimethylsilyl, and t-butyldiphenylsily;

reacting the compound of formula (XXII) with a silylated-R_2 compound, in the presence of a Lewis acid, whereby said leaving group is displaced, to obtain a compound of formula (XXIII):

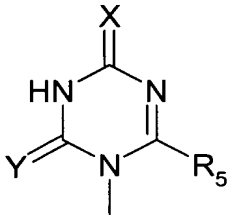


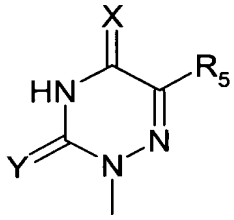
(XXIII)

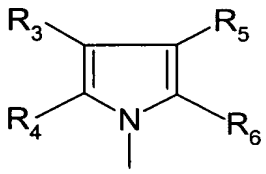
wherein

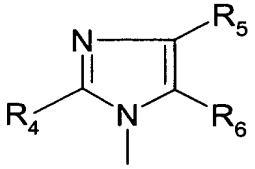
Z is S;

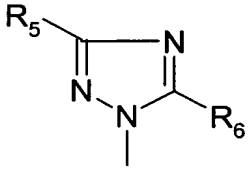
R_2 is selected from the following group:

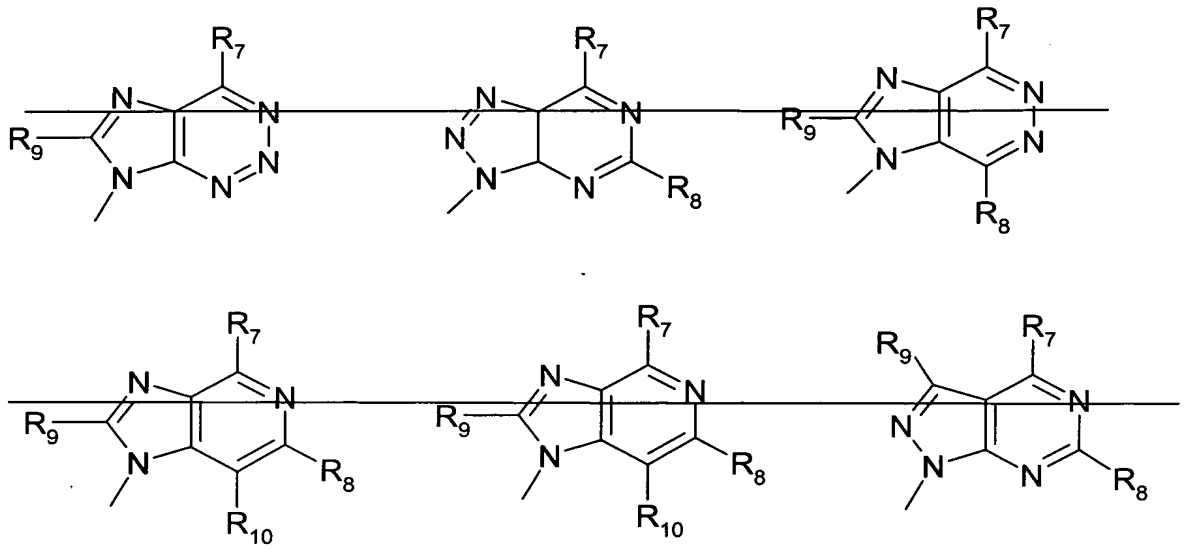












X is oxygen or sulfur;

Y is oxygen or sulfur;

R_3 and R_4 are independently selected from hydrogen, hydroxyl, amino, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyl or aracyl; and

R_5 and R_6 are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy;

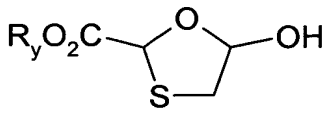
~~R_7 and R_8 are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy; and~~

~~R_9 and R_{10} are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~; and

optionally further comprising oxidizing Z of said compound of formula (XXIII) to obtain a compound of formula (XXIII) wherein Z is S=O or SO_2.

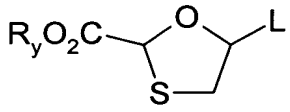
46. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is C_{1-12} alkyl or C_{6-20} aryl to obtain a compound of formula (XV)



(XV) ;

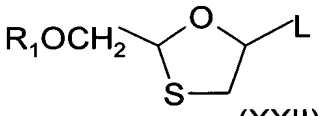
converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

converting the group R_yO_2C of the compound of formula (XVI) to a hydroxymethyl group;

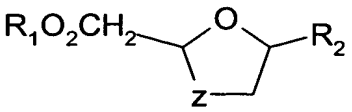
protecting the resulting hydroxymethyl with a protecting function R_1 to obtain a compound of formula (XXII):



(XXII)

wherein R_1 is selected from the group consisting of C_{1-16} acyl, t-butyldimethylsilyl, and t-butyldiphenylsily;

reacting the compound of formula (XXII) with a silylated-R_2 compound, in the presence of a Lewis acid, whereby said leaving group is displaced, to obtain a compound of formula (XXIII):

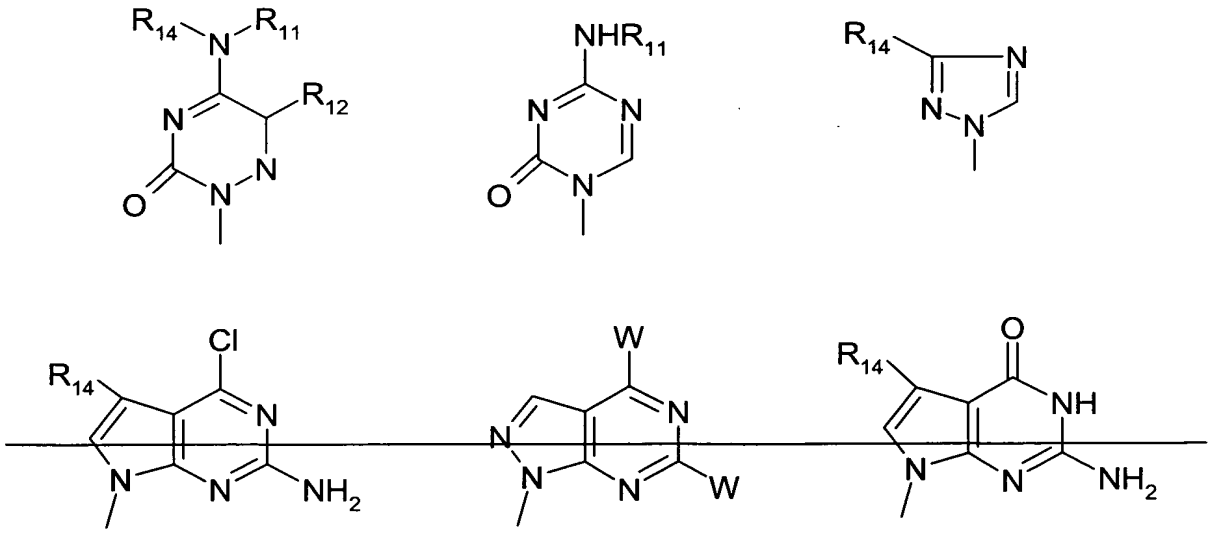


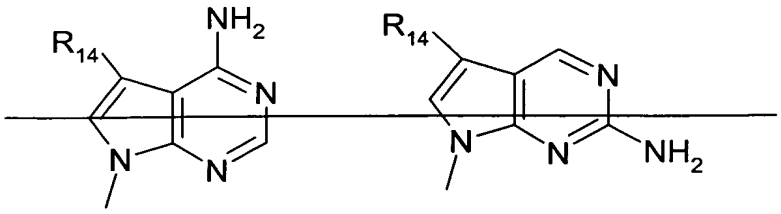
(XXIII)

wherein

Z is S;

R_2 is selected from the following group:





wherein

~~each~~ R_{11} is ~~independently~~ selected from hydrogen, acetyl, and C_{1-6} alkyl;

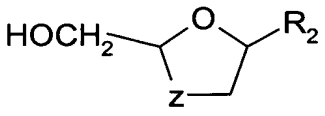
R_{12} ~~and R_{13} are independently~~ is selected from hydrogen, hydroxymethyl, trifluoromethyl, C_{1-6} alkyl, C_{1-6} alkenyl, bromine, chlorine, fluorine, and iodine; and

R_{14} is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl; ~~and~~

~~each W is independently selected from hydrogen, bromine, chlorine, fluorine, iodine, amino, and hydroxyl;~~ and

optionally further comprising oxidizing Z of said compound of formula (XXIII) to obtain a compound of formula (XXIII) wherein Z is S=O or SO_2.

47. (Previously Presented) A process according to claim 45, further comprising the step of removing the hydroxyl protecting function R_1 from compound (XXIII) to obtain a compound of formula (I):

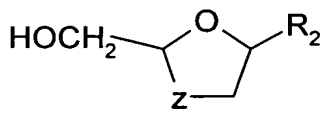


(I)

wherein Z is S, S=O, or SO_2, and R_2 is as defined.

48. (Previously Presented) A process according to claim 47, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, $TiCl_4$ and $SnCl_4$.

49. (Previously Presented) A process according to claim 46, further comprising the step of removing the hydroxyl protecting function R_1 from compound (XXIII) to obtain a compound of formula (I):



(I)

wherein Z is S, S=O, or SO_2, and R_2 is as defined.

50. (Previously Presented) A process according to claim 49, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, $TiCl_4$ and $SnCl_4$.

51. (Cancelled):

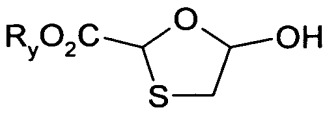
52. (Cancelled):

53. (Cancelled):

54. (Cancelled):

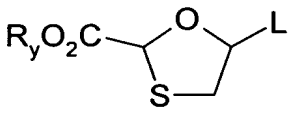
55. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is C_{1-12} alkyl or C_{6-20} aryl to obtain a compound of formula (XV)



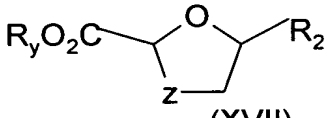
(XV) ;

converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated $-R_2$ compound in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):

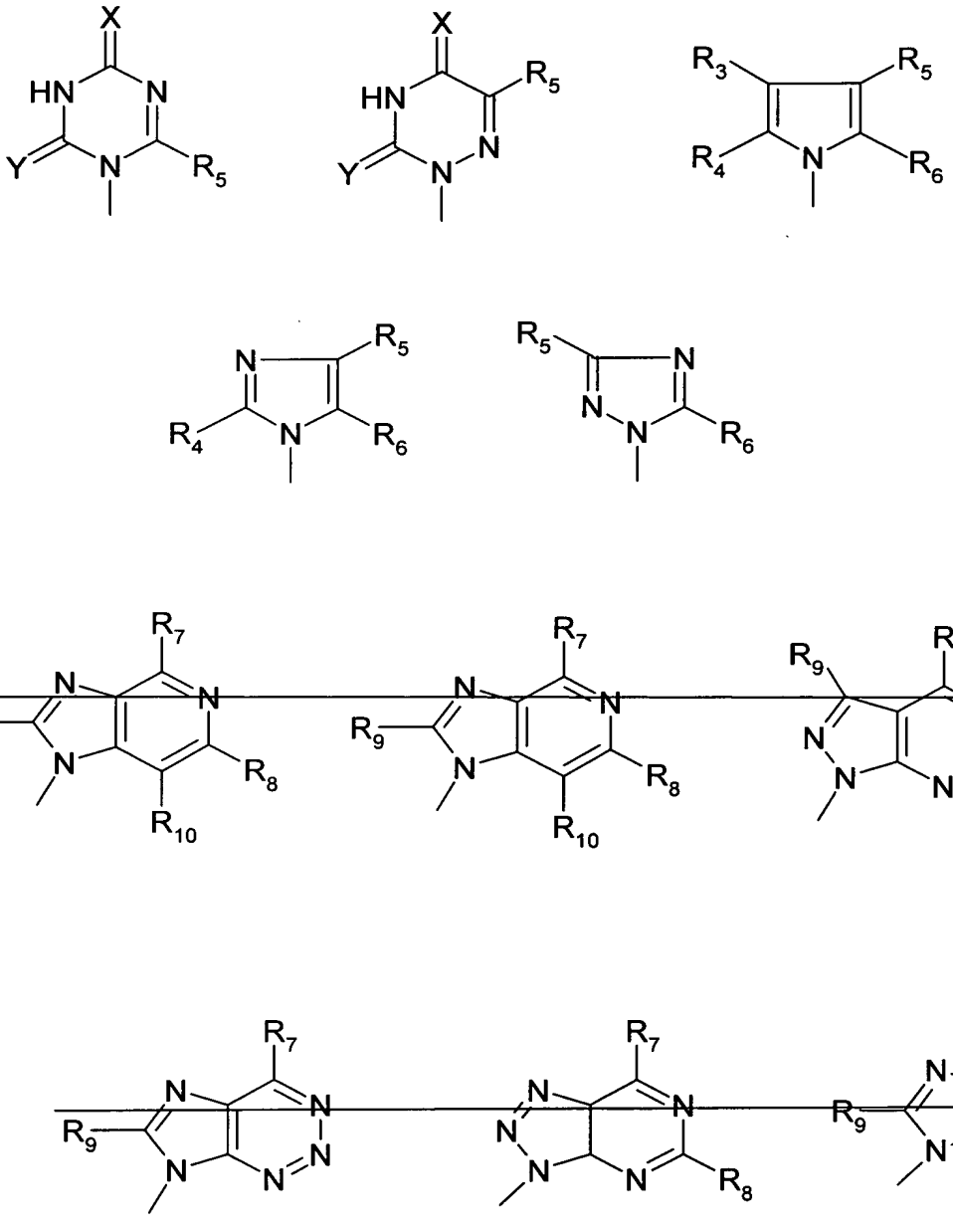


(XVII)

wherein

Z is S;

R_2 is selected from the following group:



X is oxygen or sulfur;

Y is oxygen or sulfur;

R_3 and R_4 are independently selected from hydrogen, hydroxyl, amino, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyl or aracyl; and

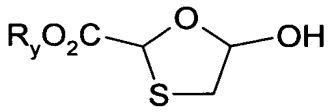
R_5 and R_6 are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~;~~

~~R_7 and R_8 are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy; and~~

~~R_9 and R_{10} are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~.

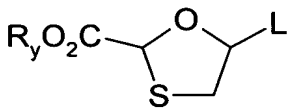
56. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is C_{1-12} alkyl or C_{6-20} aryl to obtain a compound of formula (XV)



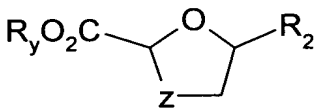
(XV) ;

converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated -R_2 compound in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):

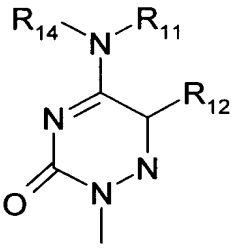


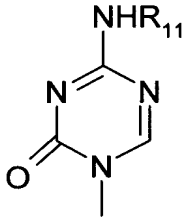
(XVII)

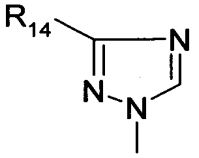
wherein

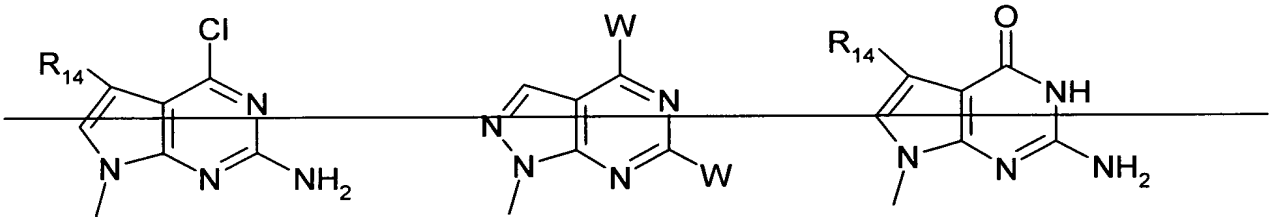
Z is S;

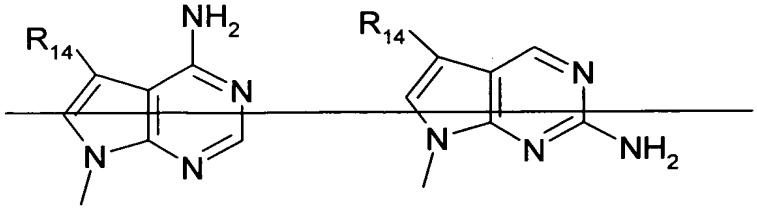
R_2 is selected from the following group:











~~each~~ R_{11} is ~~independently~~ selected from hydrogen, acetyl, and C_{1-6} alkyl;

R_{12} ~~and R_{13} are independently~~ is selected from hydrogen, hydroxymethyl, trifluoromethyl, C_{1-6} alkyl, C_{1-6} alkenyl, bromine, chlorine, fluorine, and iodine; and

R_{14} is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl~~; and~~

~~each W is independently selected from hydrogen, bromine, chlorine, fluorine, iodine, amino, and hydroxyl~~.

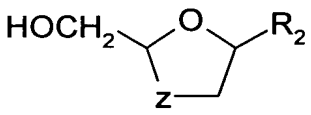
57. (Previously Presented) A process according to claim 55, further comprising oxidizing Z of the compound of formula (XVII) to give a compound of formula (XVII) wherein Z is S=O or SO_2.

58. (Previously Presented) A process according to claim 55, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, $TiCl_4$ and $SnCl_4$.

59. (Previously Presented) A process according to claim 55, further comprising

optionally oxidizing Z of the compound of formula (XVII) to give a compound of formula XVII wherein Z is S=O or SO_2 and

reducing the R_yO_2C group of the compound of formula (XVII) to obtain a compound of formula (I):



(I)

wherein:

Z is selected from the group consisting of S, S=O and SO_2.

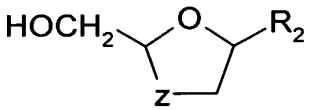
60. (Previously Presented) A process according to claim 56, further comprising oxidizing Z of the compound of formula (XVII) to give a compound of formula (XVII) wherein Z is S=O or SO_2.

61. (Previously Presented) A process according to claim 56, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, $TiCl_4$ and $SnCl_4$.

62. (Previously Presented) A process according to claim 56, further comprising

optionally oxidizing Z of the compound of formula (XVII) to give a compound of formula XVII wherein Z is S=O or SO_2 and

reducing the R_yO_2C group of the compound of formula (XVII) to obtain a compound of formula (I):



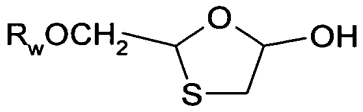
(I)

wherein:

Z is selected from the group consisting of S, S=O and SO_2.

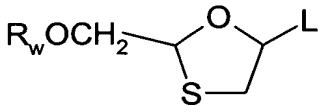
63. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula R_wOCH_2CHO, under neutral or basic conditions, wherein R_w is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



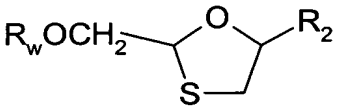
(XIII) ;

converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



(XIV) ;

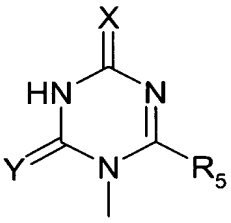
reacting the compound of formula (XIV) with a silylated R_2 compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX): wherein

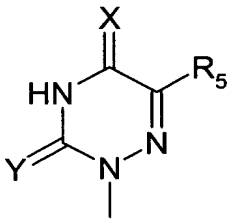


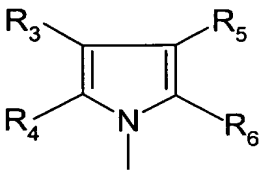
(IX) ;

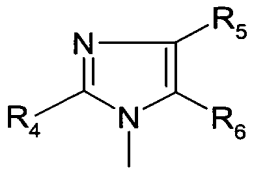
Z is S, and

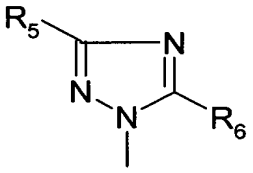
R_2 is selected from the following group:

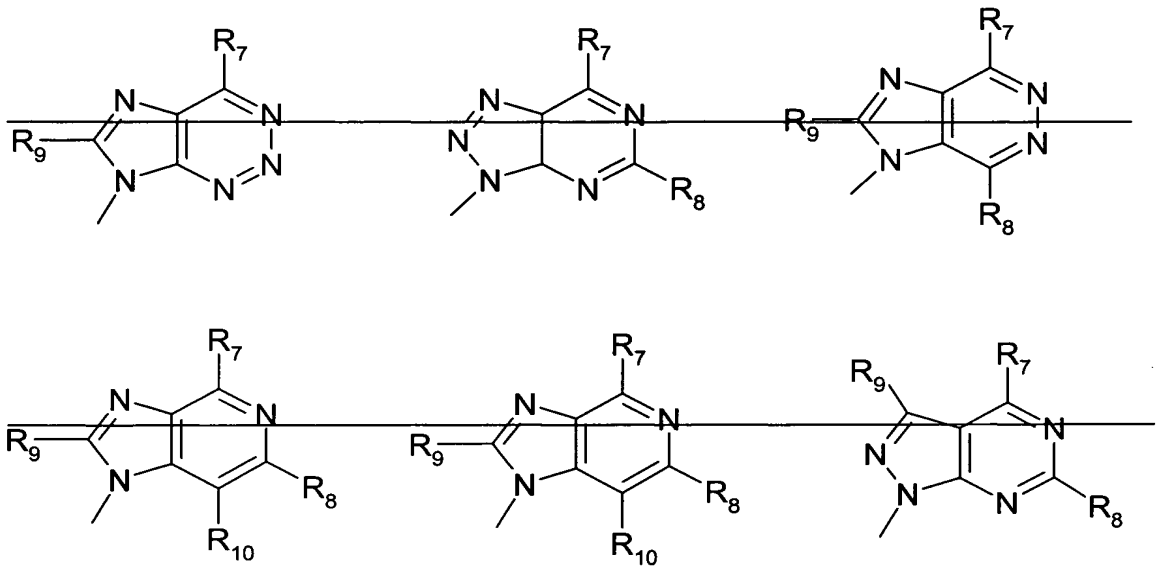












X is oxygen or sulfur; Y is oxygen or sulfur;

R_3 and R_4 are independently selected from the group consisting of hydrogen, hydroxyl, amino, substituted or unsubstituted C_{1-6} alkyl or C_{2-6} alkenyl or C_{2-6} alkynyl, and substituted or unsubstituted C_{1-10} acyl or aracyl; and

R_5 and R_6 are independently selected from the group consisting of hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, substituted or unsubstituted C_{1-6} alkyl or C_{2-6} alkenyl or C_{2-6} alkynyl, and substituted or unsubstituted C_{1-10} acyloxy; and

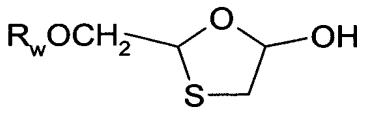
~~R_7 and R_8 are independently selected from the group consisting of hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, substituted amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, substituted or unsubstituted C_{1-6} alkyl, or C_{2-6} alkenyl, or C_{2-6} alkynyl, and substituted or unsubstituted C_{1-10} acyloxy; and~~

~~R_9 and R_{10} are independently selected from the group consisting of hydrogen, hydroxy, alkoxy, amino, substituted amino, halogen, azido, substituted or unsubstituted C_{1-6} alkyl or C_{2-6} alkenyl or C_{2-6} alkynyl, and substituted or unsubstituted C_{1-10} acyloxy+ and~~

optionally further comprising oxidizing Z of said compound of formula (IX) to obtain a compound of formula (IX) wherein Z is S=O or SO_2.

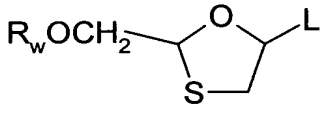
64. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula R_wOCH_2CHO, under neutral or basic conditions, wherein R_w is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



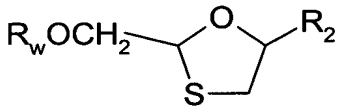
(XIII) ;

converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



(XIV) ;

reacting the compound of formula (XIV) with a silylated R_2 compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):

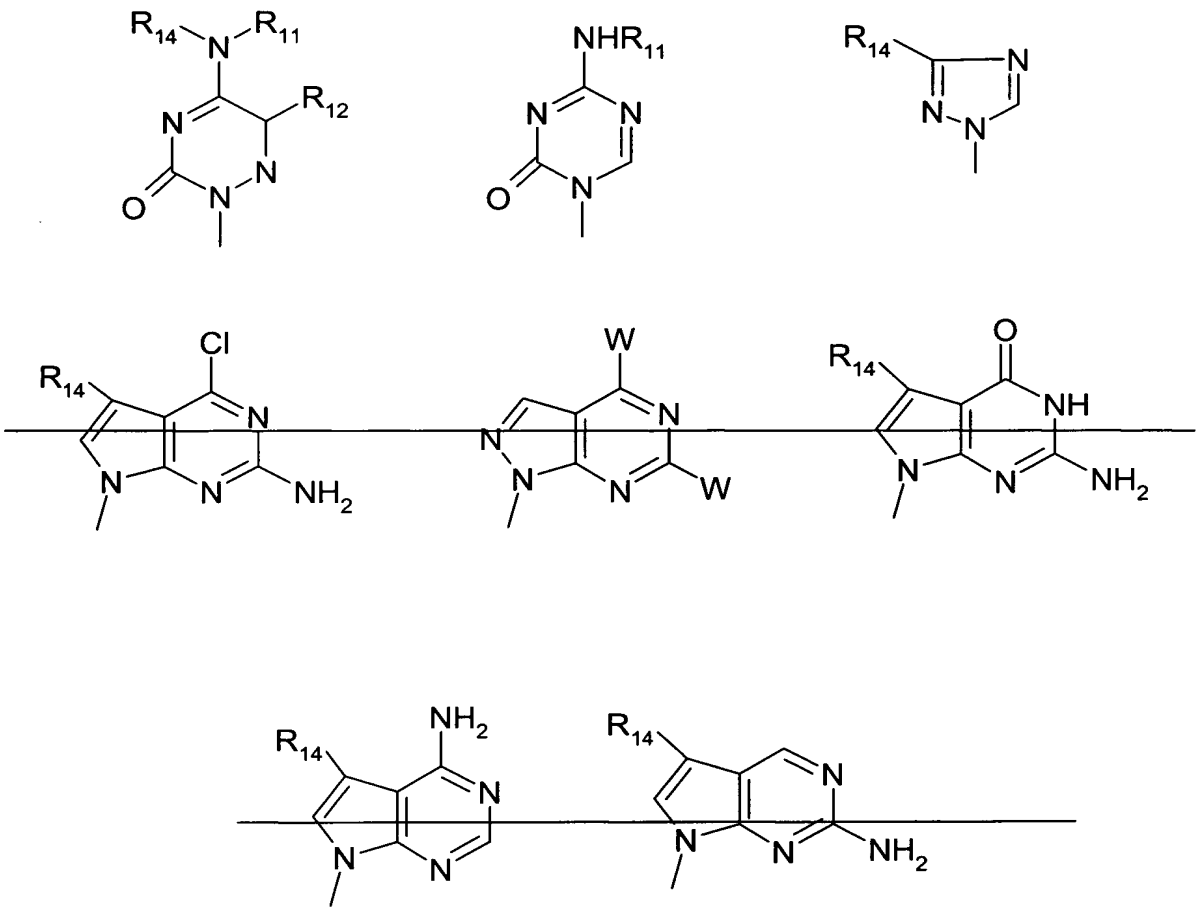


(IX) ;

wherein

Z is S, and

R_2 is selected from the following gtroup:



wherein

~~each~~ R_{11} is ~~independently~~ selected from hydrogen, acetyl, and $C_{1\text{-}6}$ alkyl groups;

R_{12} ~~and R_{13} are independently~~ is selected from hydrogen, hydroxymethyl, trifluoromethyl, substituted or unsubstituted $C_{1\text{-}6}$ alkyl or alkenyl, bromine, chlorine, fluorine, and iodine; and

R_{14} is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl~~; and~~

~~each W is independently selected from hydrogen, bromine, chlorine, fluorine, iodine, amino, and hydroxyl groups~~.

65. (Previously Presented) A process according to claim 63, wherein L is OR_z, wherein R_z is selected from: C_{1-6} alkyl groups, C_{1-6} aliphatic, aromatic acyl groups, saturated or unsaturated alkoxycarbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

66. (Previously Presented) A process according to claim 64, wherein L is OR_z, wherein R_z is selected from: C_{1-6} alkyl groups, C_{1-6} aliphatic, aromatic acyl groups, saturated or unsaturated alkoxycarbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

67. (Previously Presented) A process according to claim 63, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

68. (Previously Presented) A process according to claim 67, wherein said inert solvent is selected from pyridine, toluene and DMSO.

69. (Previously Presented) A process according to claim 63, further comprising oxidizing the sulfur of the compound of formula (IX) to give a compound of formula (IX) wherein Z is S=O or SO_2.

70. (Previously Presented) A process according to claim 64, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

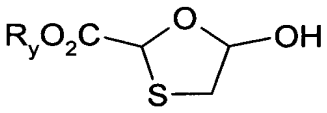
71. (Previously Presented) A process according to claim 70, wherein said inert solvent is selected from pyridine, toluene and DMSO.

72. (Previously Presented) A process according to claim 64, further comprising oxidizing the sulfur of the compound of formula (IX) to give a compound of formula (IX) wherein Z is S=O or SO_2.

73. (Cancelled):

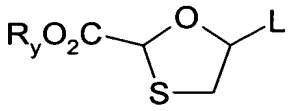
74. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula $R_yOOCCHO$, wherein R_y is $C_{1\text{-}12}$ alkyl or $C_{6\text{-}20}$ aryl to obtain a compound of formula (XV)



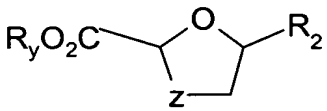
(XV) ;

converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated R_2- compound , in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):

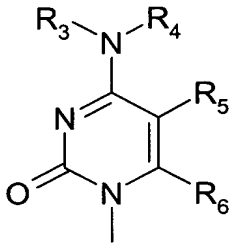


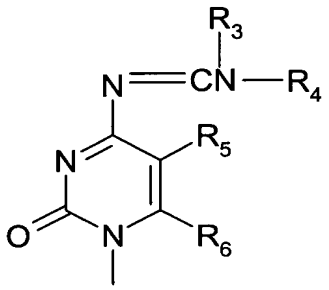
(XVII) ,

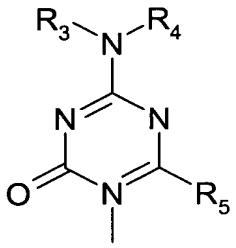
wherein

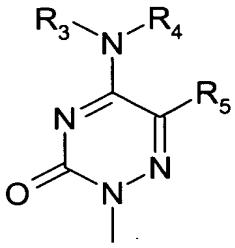
Z is S;

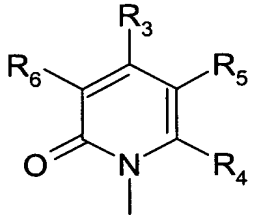
R_2 is selected from the following group:

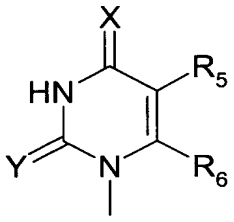


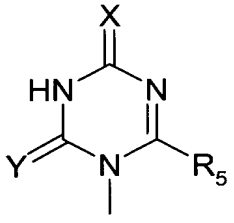


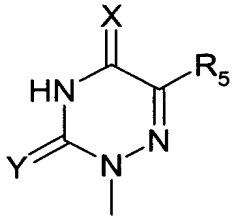


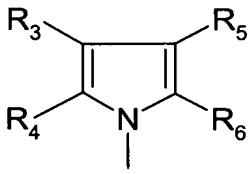


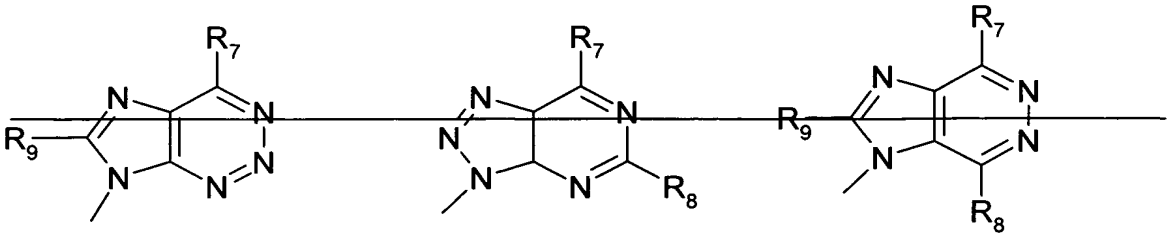


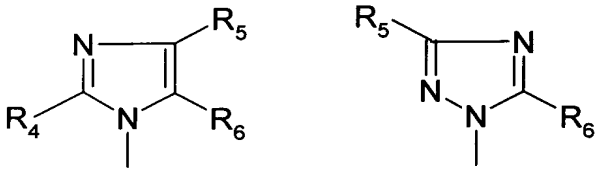


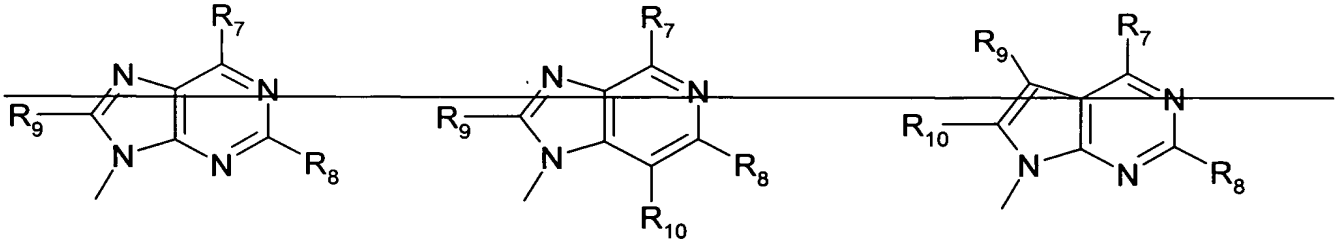


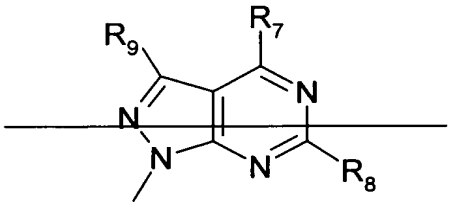


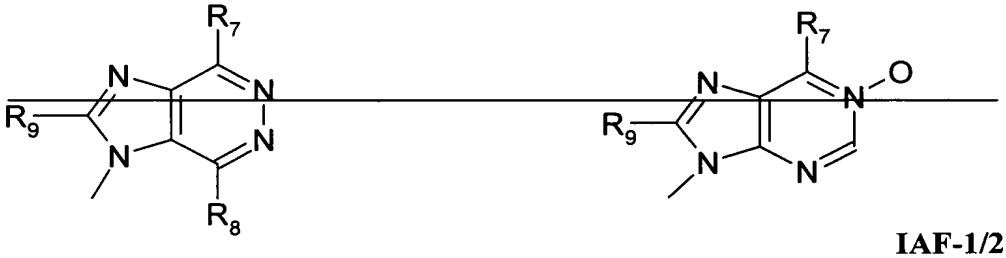












IAF-1/2 C11

X is oxygen or sulfur;

Y is oxygen or sulfur;

R_3 and R_4 are independently selected from hydrogen, hydroxyl, amino, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyl or aracyl; and

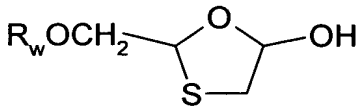
R_5 and R_6 are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy;

~~R_7 and R_8 are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy; and~~

~~R_9 and R_{10} are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~.

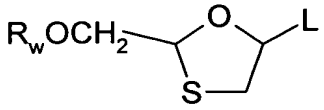
75. (Presently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula R_wOCH_2CHO, under neutral or basic conditions, wherein R_w is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



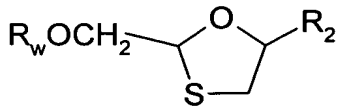
(XIII) ;

converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



(XIV) ;

reacting the compound of formula (XIV) with a silylated ~~purine or pyrimidine base or derivative thereof~~ R_2 compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):

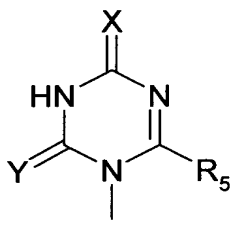


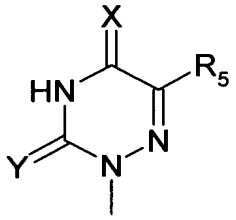
(IX) ;

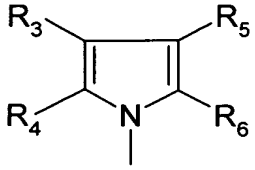
wherein

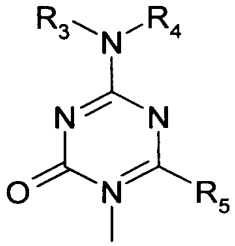
Z is S, and

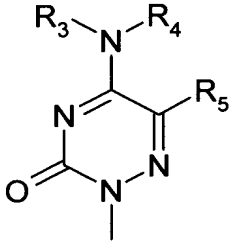
R_2 is selected from the following group:

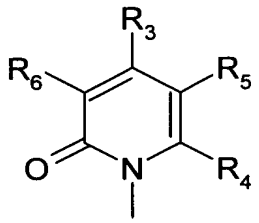


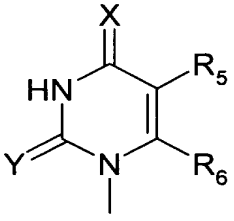


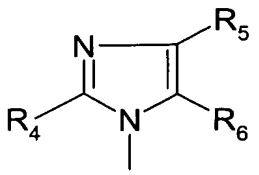


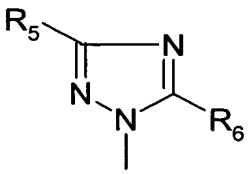


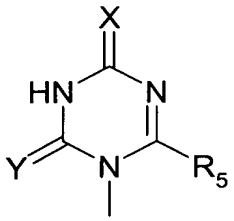


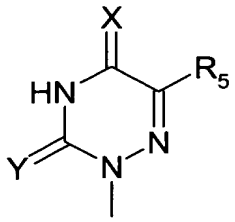


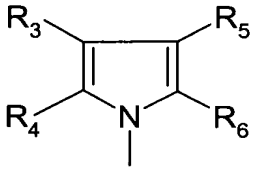


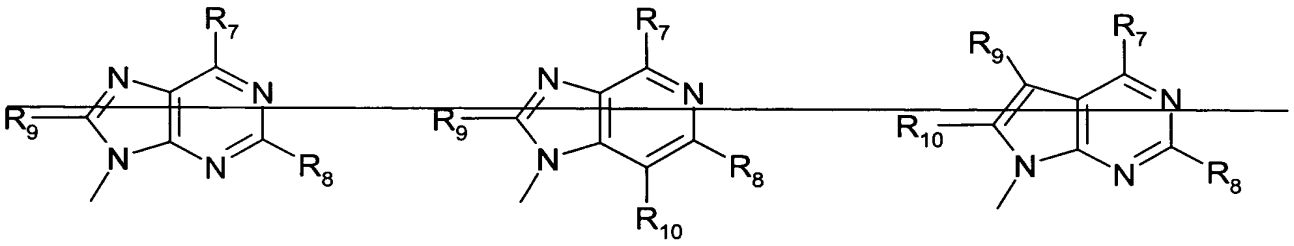


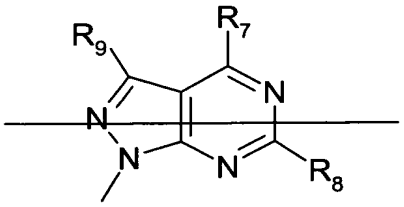


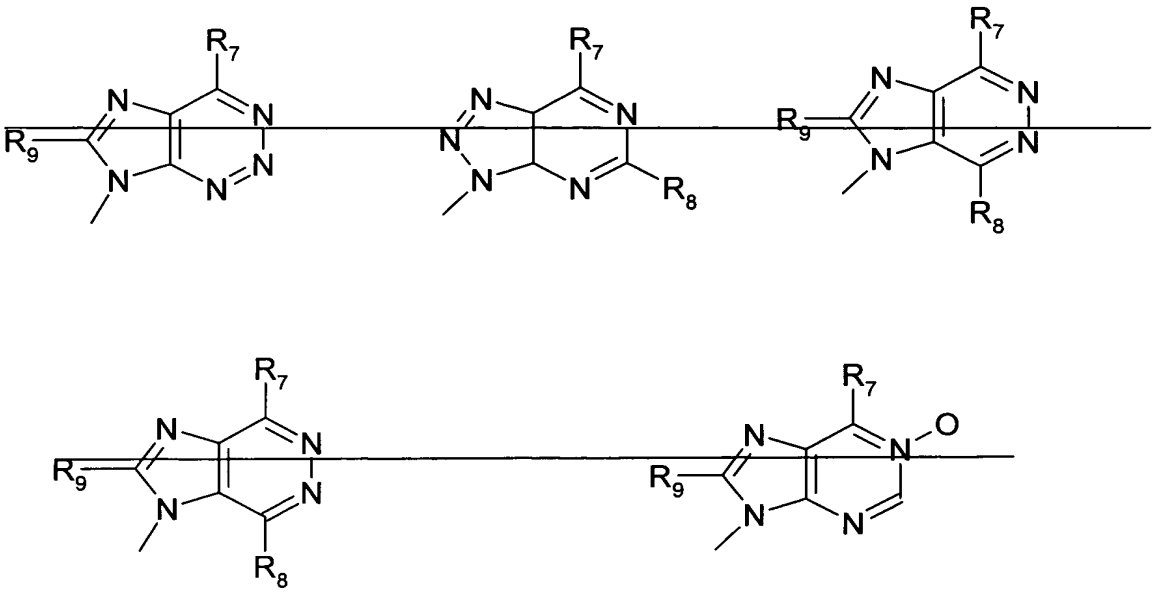












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~~R_9 and R_{10} are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, and C_{1-10} acyloxy~~.